

Volumes of Fun!

Reporting Category Measurement

Topic Comparing and measuring volumes

Materials

- Centimeter grid paper
- Scissors
- Tape
- Centimeter cubes

Vocabulary

more, less, square, equivalent, volume, equal, the same as

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: Prepare for this lesson by reproducing each template shown on page 3 on full-size centimeter grid paper.

1. Distribute to each pair of students scissors, tape, centimeter cubes, and copies of the two grid boxes paper templates. Model how to make an opened-top box out of one of the templates. Then, have student pairs make their own different size boxes.
2. Have students estimate which of their two boxes will hold more cubes, and direct them to record their estimates.
3. Direct students to fill each box with centimeter cubes, counting them as they go.
4. Have students compare the volumes of both boxes by comparing the number of cubes that are needed to fill each box.

Assessment

- **Questions**
 - “How did the number of squares you cut off each box determine how many cubes it would hold?”
 - “What would happen if you cut off six more squares from one of your boxes? Would it hold more or fewer cubes? Why?”
- **Journal/Writing Prompts**
 - “Describe this activity by writing and/or drawing.”
 - “How would the number of cubes a box could hold change if you used plastic cubes instead of centimeter cubes? Explain why.”

- **Other**
 - Circulate during the lesson to observe students and engage them in conversation about their work. Use questioning strategies that probe their understanding of the concept.

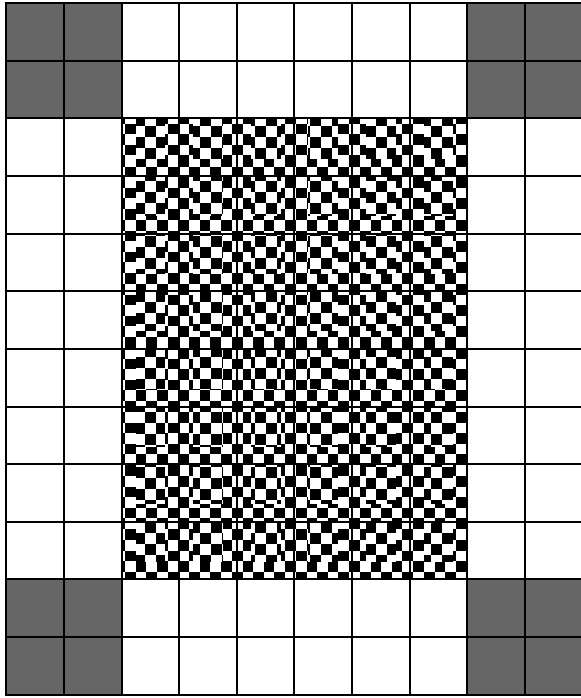
Extensions and Connections (for all students)

- Allow students additional opportunities to practice measuring volume by putting different size containers and different-size cubes in the math center for exploration. Encourage them to represent their work in their math journals and to discuss their findings with a friend or the teacher.
- Put a medium size box on a table, and place a wooden cube beside it. Tell students they must estimate how many cubes will fit in the box. Allow students to come up and examine the box and the cube. Then, have them estimate, and record their individual estimates on chart paper. Also, have them record their own estimates in their journals. Finally, have students fill the box with wooden cubes and discuss their findings.
- Challenge students to describe how they would make a box that would fit a given number of wooden cubes. Ask them to explain their reasoning.

Strategies for Differentiation

- Place a number of “benchmark” cubes (10, for example) by the estimation box to help support students’ development of estimation skills.
- Provide a poster displaying words and pictures of *more*, *less*, *the same as* for students to use as a reference.
- Provide support for students who may need assistance cutting the squares on the grids.

Grid Boxes



1. Reproduce each template on full-size centimeter grid paper.
2. Cut away the dark gray squares.
3. Fold so that the checkered areas become the bottoms of two open-topped boxes.
4. Tape sides of each box so it can be filled.

